The short- and long-term effects of exercise

UNTAMED EDUCATION

1.1.4 Applied anatomy and physiology

Vasodilate

Cardiac Output

Heart Rate

Respiratory Change

Temperature

The short- and long-term effects of exercise

DOMS

Hypertrophy

Bradycardia

Stroke Volume

Vasoconstrict

The short and long term effects of exercise

1. Heart rate

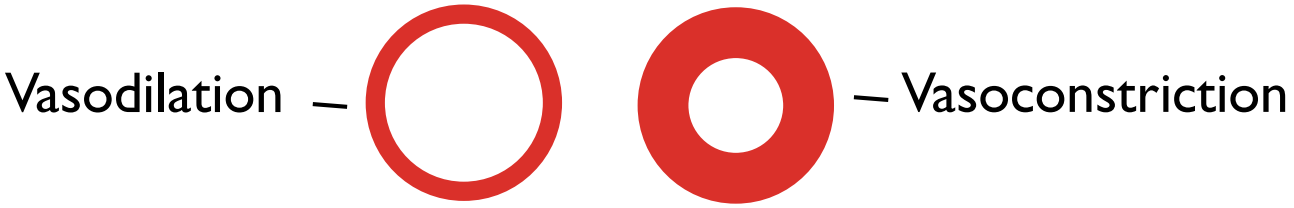
- When you start to exercise the **heart rate increases**.
- This coupled with an **increased stroke volume** increases the **cardiac output** resulting in an increased **blood flow** and better **oxygen delivery**.
- The increase in heart rate depends on the intensity of the exercise. **Intense exercise results** in a **large increase** in the heart rate.

2. Respiratory changes

- **Breathing frequency increases**.
- **Depth** of **breathing increases**, resulting in an **increase in tidal volume**.
- Minute ventilation = tidal volume x breathing frequency.
- **Minute ventilation increases**.

3. Blood Shunted to Working Muscles

- To increase oxygen delivery to the muscles.
- The arteries **widen (vasodilate)** at the muscles to increase blood flow.
- The arteries **narrow (vasoconstrict)** to other organs that have lower energy demands i.e. stomach and intestines.



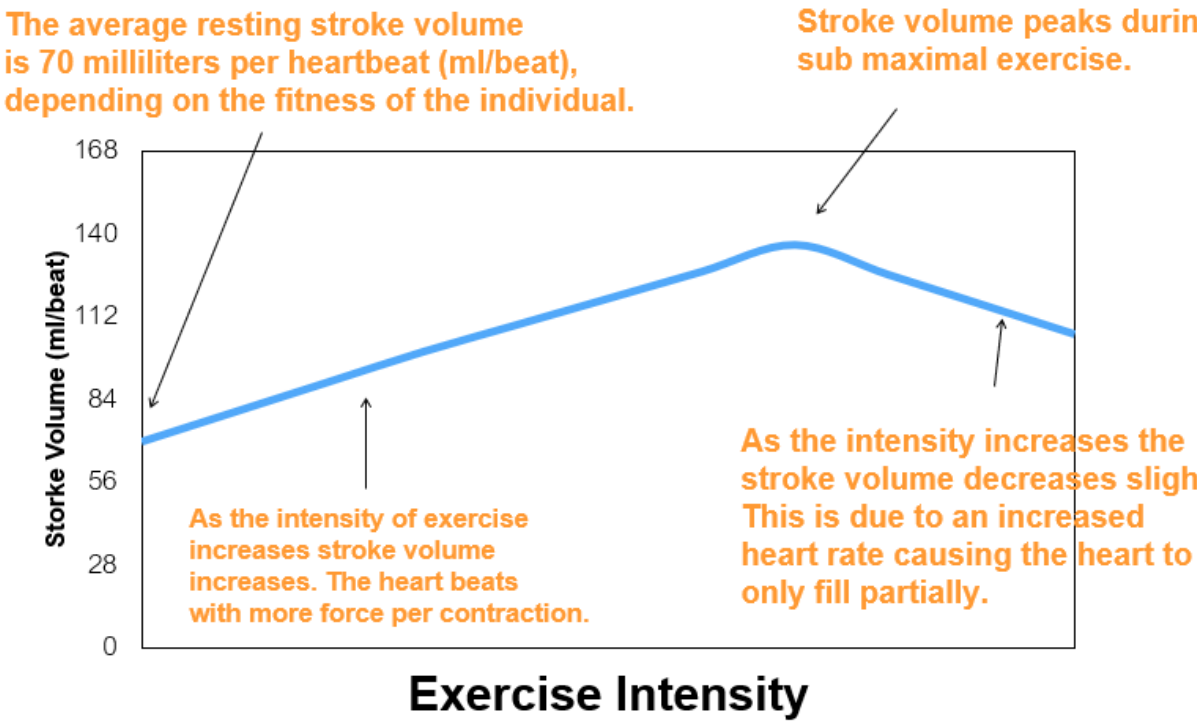
4. Other changes

- During prolonged performance and **anaerobic** respiration **lactic acid** is produced. This makes the **muscles fatigue** and you will feel tired.
- Performers must eventually **stop** due to **cramp**.
- Feel **light headed**.
- Experience **nausea**.

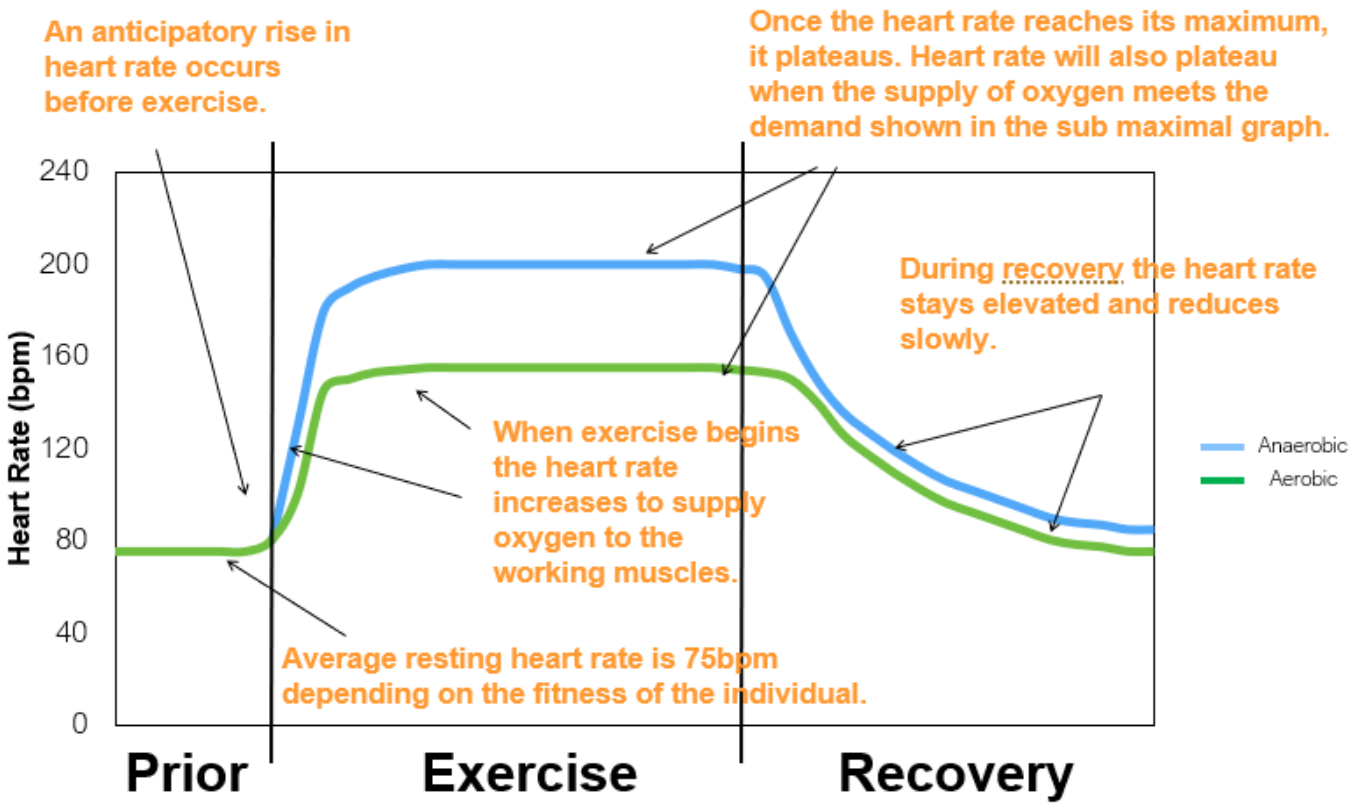
5. Recovery

- **Cardiovascular** and **respiratory systems** continue to work hard to repay the **oxygen debt** and remove **lactic acid**.
- During the recovery phase the breathing rate and heart rate remains **elevated**.
- When the body has recovered breathing rate and heart rate return to **resting levels**.

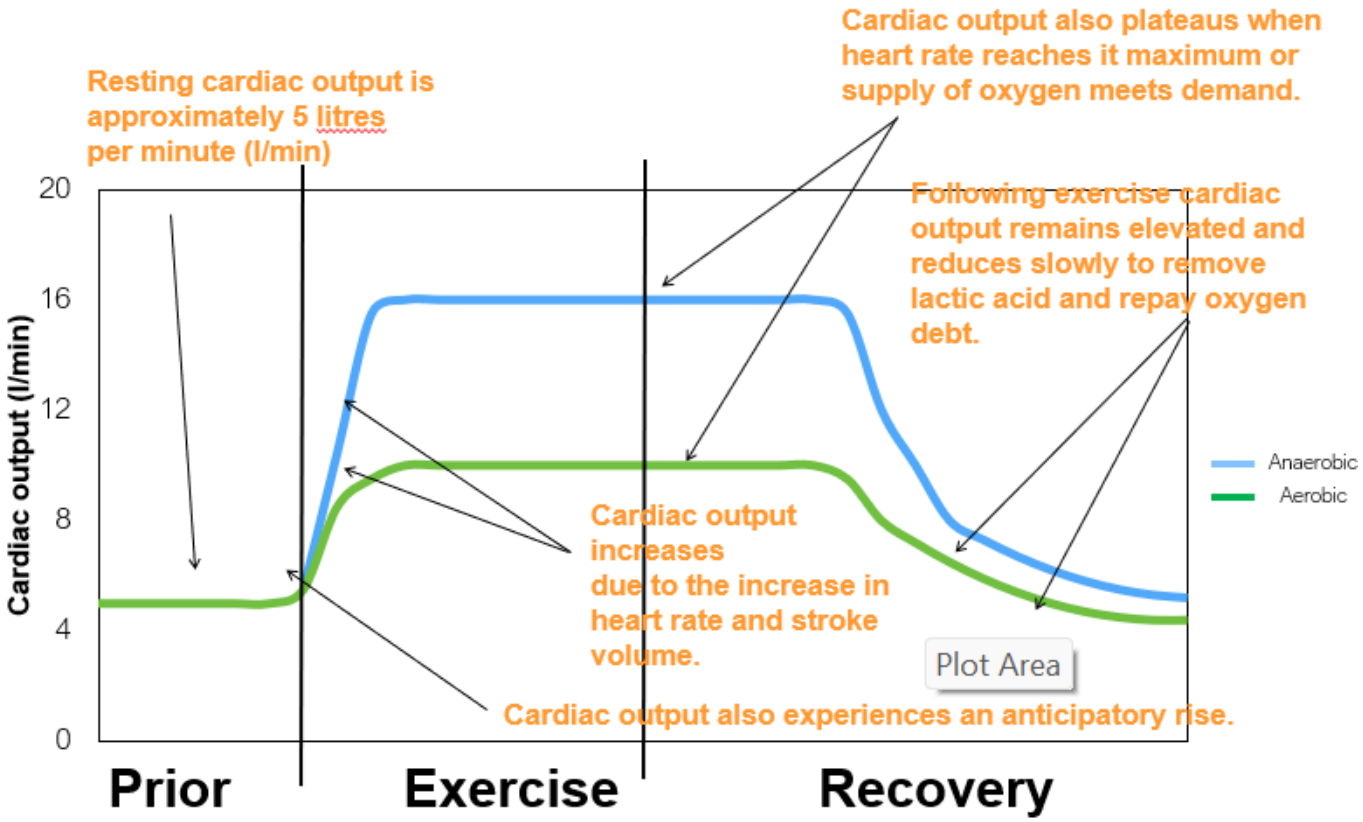
6. The short-term effects of exercise on stroke volume (SV)



7. The short-term effects of exercise on heart rate (HR)



8. The short-term effects of exercise on cardiac output (Q)



9. Long term effects of exercise

- **Resting heart rate decreases (bradycardia)**. 60 beats per minute in an adult is considered bradycardia.
- Change in body shape and an **increased lean body mass**.
- **Improvements in specific components of fitness** such as muscular endurance, cardiovascular endurance, speed, suppleness (flexibility) and strength. These improvements depend on the type of exercise you perform.
- **Increase in stamina** so you can exercise for longer.
- **Muscles** increase in **size** and **strength** (**hypertrophy**).